

REMARKS

This Office Action Response is submitted in response to the outstanding Office Action, dated December 13, 2007. Claims 1-3, 17-19, 23-25 and 29 are presently pending in the above-identified patent application. Claims 1, 17 and 23 are herein proposed to be amended. Support
5 for the amendments can be found, for example, on page 15, lines 2-6. No new matter is being introduced

In the outstanding Office Action, the Examiner rejected claims 1-3, 17-19, 23-25 and 29 under 35 U.S.C. §112 second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Also,
10 the Examiner rejected claims 1-3, 17-19, 23-25 and 29 under 35 U.S.C. §103(a) as allegedly being unpatentable over Barnhill et al (United States Patent No. 6,882,990) (hereinafter "Barnhill").

The comments of the Examiner in forming the objection and rejections are acknowledged and have been carefully considered.

FORMAL REJECTIONS

As mentioned above, the Examiner rejected claims 1-3, 17-19, 23-25 and 29 under 35 U.S.C. §112 second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Beginning on page 2 of the Office Action, the Examiner states that

[c]laim 1 has been amended to recite, “using one or more transformed phenotype values to determine one or more expression patterns by searching said one or more transformed phenotype values for one or more patterns, wherein searching comprises using a pattern-finding algorithm to determine one or more gene expression patterns.” It is unclear whether the “to determine one or more gene expression patterns” refers to a different set of gene expression patterns than what is determined by the searching of phenotype values. Perhaps applicant intends the claims to read “to determine **said** one or more gene expression patterns” or “to determine **the** one or more gene expression patterns.” (Emphasis in original).

Applicants respectfully assert that independent claims 1, 17 and 23, as amended herein, overcome this rejection by including the limitation of “to determine the one or more gene expression patterns.” Support for this amendment can be found, for example, on page 15, lines 2-6.

Given the above remarks, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 1-3, 17-19, 23-25 and 29 under 35 U.S.C. §112, second paragraph.

PRIOR ART REJECTIONS

As mentioned above, the Examiner rejected claims 1-3, 17-19, 23-25 and 29 under 35 U.S.C. §103(a) as allegedly being unpatentable over Barnhill. On page 4 of the Office Action, the Examiner stated that,

‘990 teaches preprocessing training data (fairly reading on “control data”) sets such that flawed data are corrected (column 5, lines 17-20). Test data are also preprocessed, as described at column 5, lines 45-49, reading on the limitation of a “phenotype data.”

Applicants respectfully assert that Barnhill's "training data" does not read on or suggest "control data" of the presently claimed invention, nor does Barnhill's "test data" read on or suggest "phenotype data" of the presently claimed invention. Specifically, in connection with "training data," the passage of the Barnhill reference cited by the Examiner states

5 [p]re-processing the training data set may comprise identifying missing or erroneous data points and taking appropriate steps to correct the flawed data or as appropriate remove the observation or the entire field from the scope of the problem.

10 In contrast, page 6, lines 21-23 of the present specification states that "the present invention is used to take an initial set of expression data for one phenotype (generally called the control set and containing information from healthy cells)."

Also, in connection with "test data," the passage of the Barnhill reference cited by the Examiner states

15 [a] test data set is pre-processed in the same manner as was the training data set. Then, the trained learning machine is tested using the pre-processed test data set. A test output of the W trained learning machine may be post-processing to determine if the test output is an optimal solution.

20 In contrast, page 6, lines 23-25 of the present specification states that "transformations are applied to a set of expression data from another phenotype (generally called the phenotype set and containing information from unhealthy cells)."

25 As evidenced by the cited passages above, the Barnhill reference does not teach, suggest or discuss the concept of phenotypes, which is the foundation for both "control data" and "phenotype data" in the presently claimed invention. Rather, "training data" and "test data" include, for example, "a vector having one or more coordinates." See, column 5, lines 15-17.

30 Additionally, Applicants submit that Barnhill does not teach or suggest, nor does the Examiner allege as much, the step of characterizing gene expression of an unknown sample by determining one or more gene expression patterns for said unknown sample and comparing said one or more gene expression patterns of said unknown sample with said one or more gene expression patterns that characterize said control data and said phenotype data to classify said

unknown sample as similar to either said control data or said phenotype data or neither. As noted above, because Barnhill does not teach, suggest or discuss the concept of phenotypes, Barnhill could not correspondingly teach the step of classifying an unknown sample as similar to either the control data or phenotype data or neither. "All words in a claim must be considered in
5 judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

On page 5 of the Office Action, the Examiner stated that,

‘990 does not specifically disclose transformation which includes transformation to a uniform distribution within an interval, as in claims 1, 17, 23
10 and 29, however, ‘990 teaches that the expansion of data may comprise applying any type of meaningful transformation to the data and that the criteria for doing so really depends upon the type of data and the knowledge sought from the data. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to have utilized a transformation that included
15 uniform distribution in order that data analysis be optimized. One of skill in the art would have had reasonable expectation of success with such a technique, because ‘990 states that it would be reasonable to use any transformation technique

Applicants respectfully assert that, as noted above, Barnhill does not teach, suggest or
20 discuss "control data" or the concept of phenotypes. As such, the Barnhill reference does not teach or suggest transforming control data, whereing the transforming results in transformed control data having a uniform distribution of gene expression signals within a selected interval in the control data, and it would correspondingly not be obvious for one skilled in the art to utilize
25 such a transforming to the incongruous components of the Barnhill reference.

If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Given the above remarks, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 1-3, 17-19, 23-25 and 29 under 35 U.S.C. §103(a).

In view of the foregoing, Applicants submit that all of the pending claims, i.e., claims 1-
30 3, 17-19, 23-25 and 29, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

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Respectfully submitted,



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